New Territory

Surgical Salvage for Stereotactic Body Radiation Therapy Failures in Lung Cancer

Jeffrey Bradley, MD

In this issue of the *Journal of Thoracic Oncology*, Neri et al.[1] present the first report of patients who underwent surgical salvage after stereotactic body radiation therapy (SBRT) for primary or metastatic lung cancer. This report is of value because it shows that a surgical salvage strategy is feasible for operable patients, and, at least in these seven patients, the surgery was accomplished without difficulty.

Local recurrence rates after SBRT for stage I lung cancers range between 5 and 15%.[2] RTOG 0236 was a prospective multiinstitutional trial that delivered 54 Gy in three fractions over 7 to 10 days to medically inoperable patients and demonstrated a 3-year local control rate of 94%.[3] Similar to the patients on this Radiation Therapy Oncology Group (RTOG) study, most patients receiving SBRT to the malignant lesions in the lung today are not eligible for surgery because of baseline pulmonary function, underlying cardiac disease, marginal performance status, or a combination of these factors. Therefore, salvage surgery has not often been a consideration for these patients.

As the data supporting SBRT in lung cancer and limited metastatic disease continues to mature, the results are becoming more convincing. SBRT offers a very high rate of local control at a low risk of morbidity. As favorable results emerge, physicians and patients will weigh SBRT in comparison with surgery. There have been two published institutional retrospective studies comparing surgery and SBRT for peripheral stage I lung cancer. One compared wedge resection to SBRT.[4] The other study compared lobectomy to SBRT.[5] Both indicate that the cause-specific survival may be similar between these two treatment strategies but that overall survival was higher for surgical patients. Both also illustrate the need for randomized prospective phase III comparisons in unselected patients. Currently, there are two ongoing randomized trials attempting to compare surgical lobectomy with SBRT for patients with stage I lung cancer. The Radiosurgery or Surgery for Operable Early Stage I Lung Cancer Study is open through the Dutch Lung Cancer Research Group. The primary objectives are to compare local and regional tumor control, quality of life, and treatment costs between lobectomy and SBRT at 2 and 5 years. In the United States, Accuray Inc. is sponsoring an International Randomized Study to Compare Cyberknife Stereotactic Radiotherapy with Surgical Resection in Stage I non-small cell lung cancer. This study is limited to centers that use the Cyberknife radiosurgery system. The primary end point is to compare 3-year overall survival for patients treated with lobectomy versus SBRT. Neither trial is meeting accrual expectations. A third trial is being opened jointly by the American College of Surgeons Oncology Group and the RTOG that will compare sublobectomy SBRT for patients who are at too high a risk for a lobectomy (ACOSOG4099/RTOG 1021). Results from any of these trials will take 5 to 10 years to be reported. Until then, we will be left with prospective phase I/II data and/or individual preference on which to base our recommendations for patients.

Department of Radiation Oncology, Mallinckrodt Institute of Radiology, Washington University School of Medicine, St Louis, Missouri.
Disclosure: The author declares no conflicts of interest.
Address for correspondence: Jeffrey Bradley, MD, Department of Radiation Oncology, Mallinckrodt Institute of Radiology, Washington University School of Medicine, St Louis, Missouri. E-mail: bradley@radonc.wustl.edu

ISSN: 1556-0864/10/0512-1879

If the trend of encouraging data continues, the number of patients who decide to be treated with SBRT rather than surgery is likely to increase.

What can be done for a patient who experiences a local failure after SBRT to the lung? In patients who are not eligible for surgery, that choice has been limited to chemotherapy, further radiation therapy, or observation. There are minimal to no data on which to base a treatment choice in this situation. Whatever the choice, the outcome is expected to be suboptimal. For operable patients who have had a local failure after SBRT, up until now an uncommon situation, the optimal treatment strategy is surgical salvage. The article by Neri et al. indicates that surgical salvage is feasible, can be done with low morbidity, and should be a consideration for these patients. Meanwhile, more experience is necessary to verify their findings.

REFERENCES

1. Neri S, et al. Surgical treatment of local recurrence following stereotactic body radiotherapy for primary and metastatic lung cancers. *J Thorac Oncology* In press.
2. Videtic G, Stephans KL. The role of stereotactic body radiotherapy in the management of non-small cell lung cancer: an emerging standard for the medically inoperable patient? *Curr Oncol Rep* 2010;12:235–241.
3. Timmerman R, Paulus R, Galvin J, et al. Stereotactic body radiation therapy for inoperable early stage lung cancer. *JAMA* 2010;303:1070–1076.
4. Grills IS, Mangona VS, Welsh R, et al. Outcomes after stereotactic lung radiotherapy or wedge resection for stage I non-small-cell lung cancer. *J Clin Oncol* 2010;28:928–935.
5. Crabtree TD, Denlinger CE, Meyers BF, et al. Stereotactic body radiation therapy versus surgical resection for stage I non-small cell lung cancer. *J Thorac Cardiovasc Surg* 2010;140:377–386.